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nians because the M,N frequencies had never been reported for this ethnic group. Our attempt to test the Druze, a special religious group, unfortunately never resulted in a large enough sample to have any value, but the results are presented for the sake of completeness.

Our blood group results on two tribes of Syrian Bedouin have already been reported (Boyd and Boyd, '38). The other Syrian results are reported here. They include tests on about 131 individuals from Boarij, 306 from Meshghara (both towns in the Lebanon), 339 Armenians living in Beyrouth and nearby Ghazir, and an insignificant sample of Druze from 'Abadiya, not far from 'Aley, on the way up from Beyrouth to Damascus. In addition to determining the blood groups and types, we also recorded in a rough way degrees of hair, eye, and skin pigmentation, looked for hair on the second phalanx of the fingers, and tested for taste reaction to phenyl-thio-carbamide. These results are also presented.

Methods of preparation of the sera we used have been presented previously (Boyd, '39 a). Groupings were carried out by the test-tube method, as recommended by Landsteiner and by Schiff (compare Boyd and Boyd, '37; Boyd, '39 b). In each day's set-up bloods of known type were included, to check the activity of the sera. The anti-B, -M, and -N sera were preserved with acriflavine, and the anti-A with brilliant green, as recommended by Rosenthal (Boyd, '39 a). They were transported in stoppered bottles in a tin box, protected with rubber pads, which was kept on ice as much of the time as possible.

Taste reactions to phenyl-thio-carbamide were tested by means of filter paper impregnated with the substance, as described by Parr, one of the first to call attention to the anthropological significance of taste reactions to this compound.

We framed our questions to the subjects with considerable care, and frequently used blank paper to check the honesty of replies. We found our smattering of Arabic in general sufficient for this work, so that it was not necessary to depend upon interpreters for the patient's reaction to the test substance. The subjects were always asked to compare the taste, if they perceived one, to that of a substance known to them, and if

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they declared they tasted nothing, they were asked to consider 143
if they were tasting plain paper. They were tested one at a 125
time, to avoid suggestion so far as possible, and in places 151
where a high percentage were positive, enough blanks were interspersed among the tests to keep the rumour going about that some persons could taste this peculiar paper, while others could not. We also assured the patients in advance that no stigma, clinical or otherwise, attached to the ability or lack of ability to taste the substance. The work was of course less accurate, being carried out relatively hastily under "field" conditions, than a study made in the laboratory would have been. But we do not think that there are enough errors in our data to affect the percentages significantly.

Since our record of hair and eye color was incidental to the 142
blood grouping work, and usually had to be done hurriedly, 125
we adopted the simple plan of classifying by inspection all hair and eyes into four equal grades according to depth of pigmentation, ranging from the lightest "Nordics" to the darkest Africans. We planned to include in the first grade of hair blonds, ranging from albinos to Scandinavian blonds, in the second blonds and very light browns, in the third browns of different shades, in the fourth dark browns and blacks. In the case of eyes, grade 1 included the blues, 2 the dark blues and grays, 3 the "hazels" and browns, and 4 the dark browns and blacks. Of course such a classification is very crude, and we may unconsciously have varied our standards somewhat in different localities, but not enough, we feel, greatly to affect the results.

Degrees of skin pigmentation were similarly estimated: 1 signifies "white" skin and so on, up to 4 which includes the "blacks".

The presence or absence of hair on the second phalanx of 142
the fingers, inherited, according to Danforth, as a dominant, 143
was also observed rather hastily, to test if there were differ- 125
ences in frequency in different ethnic groups. The presence of even a single hair was taken as positive. Our results are probably only approximate (compare Boyd and Boyd, '37).

The results are presented in table 1.

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TABLE 1

Blood groups

PLACE	RELIGION	SUBJECTS	PER CENT OF GROUP				GENE FREQUENCIES			
			O	A	B	AB	p	q	r	D/σ
Bourij	Muslim	131	23.7	37.4	29.8	9.1	.295	.344	.487	2.1
Mesbghara	Christian	107	29.0	35.5	28.0	7.5	.265	.217	.339	0.9
"	Muslim	199	44.7	40.2	11.6	3.5	.232	.081	.669	0.2
"	All	306	39.2	38.6	17.3	4.9	.256	.126	.626	0.8
Beyrouth and Ghazir (Armenians)	Christian	340	27.7	53.5	13.2	5.6	.375	.113	.336	1.3
'Abadiya	Druse	28	21.4	67.9	7.1	3.6	.482	.071	.463	0.4

Gene frequencies calculated by relations: $r = \sqrt{O/100}$,

$p = \sqrt{O/100 + A/100} - \sqrt{O/100}$, $q = \sqrt{O/100 + B/100} - \sqrt{O/100}$.

$D = 1 - (p + q + r)$, $\sigma = \sqrt{\frac{pq}{2 \vee (1-p)(1-q)}}$

Blood types

PLACE	RELIGION	SUBJECTS	PER CENT OF GROUP			GENE FREQUENCIES		
			M	MN	N	m	n	D/σ
Bourij	Muslim	131	24.4	52.7	22.9	.508	.492	0.6
Mesbghara	Christian	107	34.6	51.4	14.0	.553	.347	0.7
"	Muslim	199	28.6	52.3	19.1	.548	.452	0.8
"	All	306	30.7	52.0	17.3	.567	.433	1.0
Beyrouth and Ghazir (Armenians)	Christian	339	34.2	45.4	20.4	.569	.431	1.1
'Abadiya	Druse	28	53.6	39.3	7.1	.733	.267	0.6

Gene frequencies calculated by relations: $m = M/100 + MN/200$,

$n = N/100 + MN/200$, $D = 1 - (\sqrt{\frac{M}{100}} + \sqrt{\frac{N}{100}})$,

$\sigma = 0.5/\sqrt{V}$. (Compare Boyd, '38).

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Taste reaction to phenyl-thio-carbamide

PLACE	RELIGION	SEX	SUBJECTS	PER CENT POSITIVE OR NEGATIVE	
				+	—
Bourij	Muslim	Male	61	60.6	39.4
"	"	Female	58	75.9	24.1
Mesbghara	Christian	Male	82	69.5	30.5
"	"	Female	14	71.4	28.6
"	Muslim	Male	115	79.1	20.9
"	"	Female	56	89.3	10.7
"	All	Male	197	73.1	26.9
"	"	Female	70	85.7	14.3
Beyrouth and Ghazir (Armenians)	Christian	Male	147	72.8	27.2
	"	Female	164	77.4	22.6
'Abadiya	Druse	Male	9	66.7	33.3
"	"	Female	15	93.3	6.7

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It is our impression, however, that the Moslems in Meshghara represent the original population, while the Christians mostly represent a more recent immigration, probably from regions near the coast. The inhabitants of Boarij, and the inhabitants of Beyrouth tested by Parr ('31) show a per cent of group B somewhat in excess of that in the Moslems of Meshghara. It is somewhat difficult to test for the significance of this difference since Parr's results themselves do not seem to be altogether internally consistent. In any case, throughout the Near East, sharp local differences in racial characters can be observed, and are not surprising, in view of the intense conservatism of the local cultures.

Our A,B results for the Druze, doubtless because of the small size of the sample, do not agree well with those of Parr ('31); no significance can be attributed to this.

The results reported by Shanklin ('38) for the Bekaa and Alouites, whom he lists as mountain dwelling groups, are also different from each other, but perhaps not on the whole too different from our own.

The frequencies for the M,N types, the first to be reported for settled inhabitants of Syria, do not seem to present anything unusual. The M,N frequencies in Syrians and Armenians apparently do not differ notably from those in Europe, but do seem to differ from those in the only two tribes of Syrian Bedouin tested for M and N, where significantly low values of N were found (Boyd and Boyd, '38). We are inclined to consider this another example of the evolutionary effects of isolation (compare Boyd, '40). In M and N frequencies the Druze may resemble the Bedouin, for the χ^2 test indicates that the difference between the M,N frequencies of the Druze and the inhabitants of Boarij, for instance, is significant, in spite of the smallness of the samples. Of course, if the samples had been larger the difference might have been much less marked.

The taste reactions to phenyl-thio-carbamide show in every case the higher proportion of tasters among the females previously reported (Fisher and Brandt, '37; Boyd and Boyd, '37). The per cent of tasters is probably not significantly different in any of these villages from the results obtained for

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other Near-Eastern peoples (Parr, '34; Boyd and Boyd, '37). The whole Near East, if we may generalize from the still relatively scanty data at our disposal, seems to be relatively homogeneous with respect to the "tasting" gene. Our results support a suggestion previously made by us that most of Parr's subjects were males.

It is still open to doubt if the presence of hair on the second phalanx is a simple hereditary character. In our previous report (Boyd and Boyd, '37 a), we mentioned that, although there was considerable variation in sex incidence, the racial variations observed were slight. On the whole, the same statement would also apply to our new data, but there is a suggestion that there is a higher incidence of mid-digital hair in Boarij than in Meshghara, for instance. Sewall ('39) found very few Eskimos had mid-digital hair, suggesting that strong racial differences may exist.

The grades of eye color found in the populations reported here are fairly consistent, with rather more light eyes than we found in Egypt. The hair pigmentation is on the whole dark, and it will be noted that in several cases there is a suggestion that the males are darker. A similar tendency was observed in some of the populations we reported in 1937. The skin is on the whole lighter than in Egypt, and again the males seem to be the darker. Greater exposure to the sun may be a contributing factor. The Armenians seem somewhat darker than the Syrians (compare Seltzer, '36). Our observations on Syrian pigmentation seem to agree roughly with those of Shanklin ('38).

Bedouin results. In addition to testing the blood groups of the Syrian Bedouin, we made other observations on them. The blood groups have been previously reported (Boyd and Boyd, '36), but it may be worth while to present here the other results, even though the conditions under which we had to work were such that our pigmentation, etc., figures for the Bedouin are less to be trusted (see table 2). The subjects were all males.

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always heterozygous. If inbreeding had modified the A,B groups notably, we should expect the frequency of group AB to be less than 2pq (the gene frequencies p and q are calculated from the frequencies of O, A, and B only). In fact, 2pq does give an expected percentage of group AB of 14.4 which is greater, but not significantly greater than the value found.

Whether a person of group A or group B is heterozygous or homozygous cannot be told readily except by test of his parents or offspring, or both, and even then the test will of course often be inconclusive, since human families are so often too small to give a sample of all the types of children an individual could produce. In our tests on the families of Bourij, we tested six families in which one of the parents belonged to group A or group B. In four of these families, the groups of the children proved the individual in question to have been heterozygous, a result which again does not suggest that the proportion of heterozygotes in the population of Bourij has been notably decreased by inbreeding.

As a rule when the anthropologist has invoked the concept of inbreeding, the exact genetic mechanism by which the character in question is determined has been obscure, so no test analogous to the above could be made. We venture to suggest that if in such cases tests could be made, inbreeding would be found not to be one of the major forces in the modification of the average local human population.[1]

SUMMARY

Tables showing the results of studies of blood groups, blood types, taste reaction to phenyl-thio-carbamide, mid-digital hair, and eye, hair, and skin pigmentation are presented for

[1] We are indebted to the officers of the Near Commissariat in Beyrouth, and in particular to M. le Général Martin, for permission and encouragement to carry out this work; to Miss Anne Fuller, holder of the Margaret E. Mackay Fellowship of the American Association of University Women, 1937-38, for assistance and hospitality in Bourij; to the Trabulsi family for hospitality and assistance in Mashghara; and to Drs. Berberian and Kassatly for help with the Armenian work. Miss Najla 'Arab-Ibn put us in touch with the Druze village of 'Aindjar. Many others, too numerous to mention here, made our difficult task somewhat lighter. To all of these we extend our best thanks.

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the native inhabitants of three Syrian towns, and for Armenians now living in and near Beyrouth. Observations on the last five characteristics are presented for samples of two tribes of Syrian Bedouin. The effect of inbreeding on blood groups and types is discussed.

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